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(54) **BIKE BOTTLE HOLDER HAVING A FASTENING STRUCTURE**

(57) A bike bottle holder having a fastening system comprises a mount, a holding frame, a spring, a fastening part, and a fitting unit. The mount is provided with a rear plate on which a through fitting hole is arranged. The mount is to be screwed via the fitting hole on a bicycle frame. The rear plate is combined with the holding frame, and an opening is formed on the holding frame. A chamber is arranged in the upper part of the front side of the rear plate. A base is arranged in such a way that it extends from the lower side of the rear plate. A recess is provided on each of the both opposite sides of the chamber and formed in such a way that a retaining portion is formed on the front end of the respective recess. Furthermore, a clearance hole is arranged in the centre of the chamber in such a way that it goes backwards through the chamber. The fastening part has a main body in whose centre a through bore is arranged. A latch is arranged on each of the two opposite sides of the rear end of the main body in such a way that the latch extends from the said respective side.

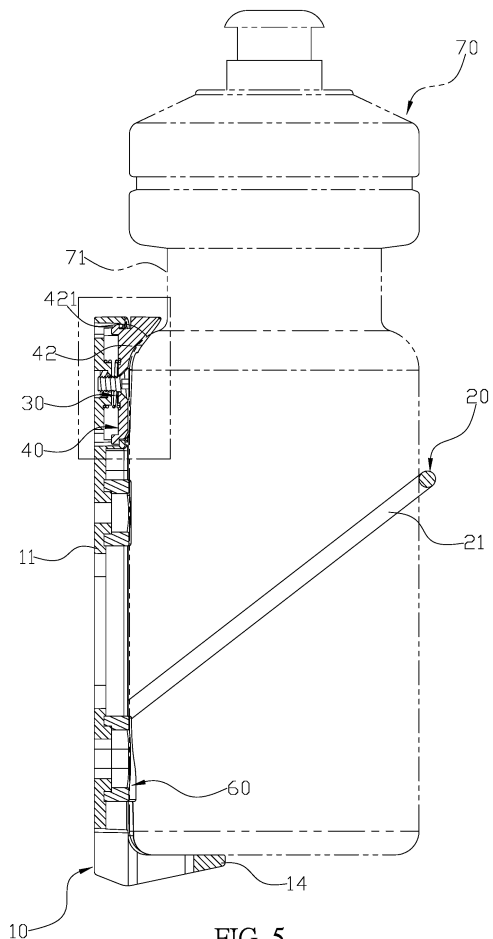


FIG. 5

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Description

BACKGROUND OF INVENTION

1. Field of Invention

[0001] The present invention relates to a bike bottle holder having a universal fastening structure.

2. Description of the Related Art

[0002] A rider loses a lot of fluids during the cycling sport. Therefore, it is extraordinarily important for him to drink water timely. For this purpose, bike bottle holders are made to be mounted on bicycles.

[0003] A conventional bike bottle holder comprises a mount and a frame-shaped structure having an opening through which the water bottle is taken out and put in. In use, the bottle is put on the holder through the opening and the neck of the bottle is fastened by the mount. Thus, the bottle can be fixed on the bicycle by means of the bike bottle holder. During the drive, the driver can take out the bottle through the opening and drink water.

[0004] The driver may use another water bottle, in case the previous one is lost, old, polluted or damaged. However, the conventional bike bottle holders are generally made for bottles of one single size, type and/or standard and therefore not suitable for bottles of other sizes, types and/or standards. Thus, it may happen that bottles of other sizes, types and/or standards cannot be put on the bike bottle holder or cannot be held steady by the bike bottle holder. The driver has to change the bike bottle holder if he wants to use bottles of other sizes, types and/or standards. This would cause more expenses.

SUMMARY OF THE INVENTION

[0005] An objective of present invention is to provide a bike bottle holder having a fastening structure so that bottles of different sizes, types and/or standards can be held steady by the bike bottle holder.

[0006] To achieve these and other objects of the present invention, a bike bottle holder having a fastening structure is provided. The bike bottle holder comprises a mount, a holding frame, a spring, a fastening part, and a fitting unit. The mount is provided with a rear plate on which a through fitting hole is arranged. The mount is to be screwed via the fitting hole on a bicycle frame. The rear plate is combined with the holding frame, and an opening is formed on the holding frame. A chamber is arranged in the upper part of the front side of the rear plate. A base is arranged in such a way that it extends from the lower side of the rear plate. A recess is provided on each of the both opposite sides of the chamber and formed in such a way that a retaining portion is formed on the front end of the respective recess. Furthermore, a clearance hole is arranged in the centre of the chamber in such a way that it goes backwards through the cham-

ber. The fitting unit is arranged in the clearance hole in such a way that it goes through the clearance hole and thus serves to block the fastening part, enabling a smooth insertion of the fastening part into the chamber. The spring is arranged in the chamber in such a way that an end of the spring abuts on the inner wall area of the chamber. The fastening part has a main body in whose centre a through bore is arranged. A latch is arranged on each of the two opposite sides of the rear end of the main body in such a way that the latch extends from the said respective side. When the main body of the fastening part is put into the chamber in such a way that the other end of the spring abuts on the main body, the two latches will be pushed into the two recesses together. The latches and the retaining portions block each other, avoiding the fastening part from releasing. An abutting piece is arranged on the upper edge of the front end of the main body in such a way that it protrudes from the chamber. An abutting surface is formed on an end of the abutting piece. The said end differs from the end on which the main body is arranged. The fitting unit comprises a bolt and a rear stopper. An end of the bolt is enlarged in such a way that a collar is formed. When the bolt is inserted into the through bore and the clearance hole and combined with the rear stopper on the rear side of the rear plate, the main body of the fastening part will be then blocked by the collar and the rear stopper and thus be absolutely confined in the chamber.

[0007] According to the invention, the bike bottle holder is provided with a universal fastening structure which is adjustable according to the size of the bottle or the type and standard of the neck. Thus, the bike bottle holder is suitable for a wider range of usage, which is economic, since it is not necessary to change the bottle holder even though the previous bottle is lost or not usable anymore.

[0008] According to the invention, the neck of the bottle can be securely fastened by the abutting piece in combination with the abutting surface. Thus, the bottle holder can be adjusted quickly simply by pressing the fastening part and proves to be user-friendly.

[0009] Other objects, advantages, and novel features of invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

[0010]

FIG. 1 is a perspective view of a preferred embodiment of an assembled bike bottle holder having a universal fastening structure according to the present invention.

FIG. 2 is an explosive view of a bike bottle holder according to the present invention.

FIG. 3 is a section view of an assembled bike bottle

holder according to the present invention.

FIG. 4 is an enlarged figure of a section of an assembled bike bottle holder according to the present invention.

FIG. 5 is a schematic figure showing a water bottle fastened by a bottle holder according to the present invention.

FIG. 6 is an enlarged figure of a section showing a water bottle fastened by a bottle holder according to the present invention.

FIG. 7 shows schematically the adjusting state of a bottle holder according to the present invention.

FIG. 8 is a schematic figure showing another water bottle fastened by a bottle holder according to the present invention.

FIG. 9 is an enlarged figure of a section showing another water bottle fastened by a bottle holder according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] First, please refer to FIG. 1 to FIG. 4, a bike bottle holder having a fastening structure according to the invention comprises a mount 10, a holding frame 20, a spring 30, a fastening part 40, and a fitting unit 50. The mount 10 is provided with a rear plate 11 on which a through fitting hole 12 is arranged. The mount 10 is to be screwed via the fitting hole 12 on a bicycle frame. The rear plate 11 is combined with the holding frame 20, and an opening 21 is formed on the holding frame 20. A chamber 13 is arranged in the upper part of the front side of the rear plate 11. A base 14 is arranged in such a way that it extends from the lower side of the rear plate 11. A recess 131 is provided on each of the both opposite sides of the chamber 13 and formed in such a way that a retaining portion 132 is formed on the front end of the respective recess 131. Furthermore, a clearance hole 133 is arranged in the centre of the chamber 13 in such a way that it goes backwards through the chamber 13. The fitting unit 50 is arranged in the clearance hole 133 in such a way that it goes through the clearance hole 133 and thus serves to block the fastening part 40, enabling a smooth insertion of the fastening part 40 into the chamber 13. The spring 30 is arranged in the chamber 13 in such a way that an end of the spring 30 abuts on the inner wall area of the chamber 13. The fastening part 40 has a main body 41 in whose centre a through bore 411 is arranged. A latch 412 is arranged on each of the two opposite sides of the rear end of the main body 41 in such a way that the latch 412 extends from the said respective side. When the main body 41 of the fastening part 40 is put into the

chamber 13 in such a way that the other end of the spring 30 abuts on the main body 41, the two latches 412 will be pushed into the two recesses 131 together. The latches 412 and the retaining portions 132 block each other, avoiding the fastening part 40 from releasing. An abutting piece 42 is arranged on the upper edge of the front end of the main body 41 in such a way that it protrudes from the chamber 13. An abutting surface 421 is formed on an end of the abutting piece 42. The said end differs from the end on which the main body 41 is arranged. The fitting unit 50 comprises a bolt 51 and a rear stopper 52. An end of the bolt 51 is enlarged in such a way that a collar 511 is formed. When the bolt 51 is inserted into the through bore 411 and the clearance hole 133 and combined with the rear stopper 52 on the rear side of the rear plate 11, the main body 41 of the fastening part 40 will be then blocked by the collar 511 and the rear stopper 52 and thus be absolutely confined in the chamber 13.

[0012] According to the invention, two said fitting holes 12 are arranged on the rear plate 11.

[0013] According to the invention, two said fitting holes 12 are arranged on the rear plate 11 and at least one of the fitting holes 12 is elongated.

[0014] According to the invention, a receptacle 15 for receiving the rear stopper 52 is arranged on the rear face side of the rear plate 11.

[0015] According to the invention, the two recesses 131 are arranged on the upper side and the lower side of the chamber 13, at which the upper side and the lower side of the chamber 13 face each other. The two latches 412 are arranged on the upper side and the lower side of the main body 41, at which the upper side and the lower side of the main body 41 face each other.

[0016] According to the invention, the abutting surface 421 is arched.

[0017] According to the invention, the bolt 51 is a screw and the rear stopper 52 is a nut. The bolt 51 and the rear stopper 52 can be combined with each other in a screwing way.

[0018] According to the invention, an indentation is formed on the front face side of the rear plate 11. A pad 60 is arranged in the indentation and provided with a through hole 61 which communicates with the fitting hole 12. A bolt is to be inserted into the through hole 61 and the fitting hole 12 and then be screwed on a bike frame.

[0019] According to the invention, fixing pins 62 are arranged on the pad 60 and fixing holes 16 into which the fixing pins 62 are to be inserted are arranged in the indentation of the rear plate 11.

[0020] According to the invention, the pad 60 is shock-absorbing.

[0021] When putting the water bottle 70 in the bottle holder via the opening 21, the fastening part 40 will elastically protrude forward to fasten the neck 71 of the water bottle 70 (see FIG. 5 and FIG. 6). The fastening part 40 is designed and arranged in such a way that it can be pressed to protrude in the chamber 13 (see FIG. 7) and jut out again to be reset elastically. Thus, the bottle holder

is adjustable according to the size of the water bottle 70 or the type and standard of the neck 71 and suitable for most of the water bottles 70 (see FIG. 8 and FIG. 9). Hence, it is not necessary to change the bottle holder even though the water bottle 70 is not usable anymore or lost.

[0022] According to the invention, the bike bottle holder is provided with a universal fastening structure which is adjustable according to the size of the bottle 70 or the type and standard of the neck 71. Thus, the bike bottle holder is suitable for a wider range of usage, which is economic, since it is not necessary to change the bottle holder even though the previous bottle is lost or not usable anymore. The neck 71 of the bottle 70 can be securely fastened by the abutting piece 42 in combination with the abutting surface 421. Thus, the bottle holder can be adjusted quickly simply by pressing the fastening part 40 and proves to be user-friendly.

[0023] Although the present invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of invention as hereinafter claimed.

Claims

1. A bike bottle holder having a fastening structure comprises a mount, a holding frame, a spring, a fastening part, and a fitting unit, **characterized in that:**

the mount is provided with a rear plate on which a through fitting hole is arranged;
 the mount is to be screwed via the fitting hole on a bicycle frame;
 the rear plate is combined with the holding frame, and an opening is formed on the holding frame;
 a chamber is arranged in the upper part of the front side of the rear plate;
 a base is arranged in such a way that it extends from the lower side of the rear plate;
 a recess is provided on each of the both opposite sides of the chamber and
 formed in such a way that a retaining portion is formed on the front end of the respective recess;
 a clearance hole is arranged in the centre of the chamber in such a way that it goes backwards through the chamber;
 the fitting unit is arranged in the clearance hole in such a way that it goes through the clearance hole and thus serves to block the fastening part, enabling a smooth insertion of the fastening part into the chamber;
 the spring is arranged in the chamber in such a way that an end of the spring abuts on the inner wall area of the chamber;
 the fastening part has a main body in whose

centre a through bore is arranged;
 a latch is arranged on each of the two opposite sides of the rear end of the main body in such a way that the latch extends from the said respective side;
 when the main body of the fastening part is put into the chamber in such a way that the other end of the spring abuts on the main body, the two latches will be pushed into the two recesses together;
 the latches and the retaining portions block each other, avoiding the fastening part from releasing;
 an abutting piece is arranged on the upper edge of the front end of the main body in such a way that it protrudes from the chamber;
 an abutting surface is formed on an end of the abutting piece;
 said end differs from the end on which the main body is arranged;
 the fitting unit comprises a bolt and a rear stopper;
 an end of the bolt is enlarged in such a way that a collar is formed;
 when the bolt is inserted into the through bore and the clearance hole and combined with the rear stopper on the rear side of the rear plate, the main body of the fastening part will be then blocked both by the collar and the rear stopper and thus be absolutely confined in the chamber.

2. The bike bottle holder as claimed in claim 1, wherein two said fitting holes are arranged on the rear plate and at least one of the fitting holes is elongated.
3. The bike bottle holder as claimed in claim 1, wherein a receptacle for receiving the rear stopper is arranged on the rear face side of the rear plate.
4. The bike bottle holder as claimed in claim 1, wherein the two recesses are arranged on the upper side and the lower side of the chamber and the two latches are arranged on the upper side and the lower side of the main body, at which the upper side and the lower side of the chamber face each other and the upper side and the lower side of the main body face each other.
5. The bike bottle holder as claimed in claim 1, wherein the bolt is a screw and the rear stopper is a nut, the bolt and the rear stopper being capable of being combined with each other in a screwing way.
6. The bike bottle holder as claimed in claim 1, wherein an indentation is formed on the front face side of the rear plate and a pad is arranged in the indentation and provided with a through hole which communicates with the fitting hole.

7. The bike bottle holder as claimed in claim 6, wherein the fixing pins are arranged on the pad and fixing holes into which the fixing pins are to be inserted are arranged in the indentation of the rear plate.
8. The bike bottle holder as claimed in claim 6, wherein the pad is shock-absorbing.

Amended claims in accordance with Rule 137(2) EPC.

1. A bike bottle holder having a fastening structure, comprising a mount (10), a holding frame (20), a spring (30), a fastening part (40), and a fitting unit (50), wherein:

the mount (10) is provided with a rear plate (11) on which a through fitting hole (12) is arranged; wherein the mount (10) is to be screwed via the fitting hole (12) on a bicycle frame;

the rear plate (11) is combined with the holding frame (20), and an opening (21) is formed on the holding frame (20);

a chamber (13) is arranged in the front side of the rear plate (11);

a base (14) is arranged in such a way that it extends from the lower side of the rear plate (11); a clearance hole (133) is arranged in the centre of the chamber (13) in such a way that it goes backwards through the chamber (13);

the fitting unit (50) is arranged in the clearance hole (133) in such a way that it goes through the clearance hole (133) and thus serves to block the fastening part (40), enabling a smooth insertion of the fastening part (40) into the chamber (13);

the spring (30) is arranged in the chamber (13) in such a way that an end of the spring (30) abuts on the inner wall area of the chamber (13);

the fastening part (40) has a main body (41); the fitting unit (50) comprises a bolt (51);

an end of the bolt (51) being enlarged in such a way that a collar (511) is formed; **characterized in that**

the chamber (13) is arranged in the upper part of the front side of the rear plate (11); wherein a recess (131) is provided on each of the both opposite sides of the chamber (13) and formed in such a way that a retaining portion (132) is formed on the front end of the respective recess (131);

a through bore (411) is arranged in a centre of the main body (41) of the fastening part (40); the fitting unit (50) further comprises a rear stopper (52); wherein, when the bolt (51) is inserted into the through bore (411) and the clearance hole (133) and combined with the rear stopper

(52) on the rear side of the rear plate (11), the main body (41) of the fastening part (40) will be then blocked both by the collar (511) and the rear stopper (52) and thus be absolutely confined in the chamber (13);

a latch (412) is arranged on each of the two opposite sides of the rear end of the main body (41) in such a way that the latch (412) extends from the said respective side;

wherein, when the main body (41) of the fastening part (40) is put into the chamber (13) in such a way that the other end of the spring (30) abuts on the main body (41), the two latches (412) will be pushed into the two recesses (131) together; the latches (412) and the retaining portions (132) block each other, avoiding the fastening part (40) from releasing;

wherein an abutting piece (42) is arranged on the upper edge of the front end of the main body (41) in such a way that it protrudes from the chamber (13);

an abutting surface (421) being formed on an end of the abutting piece (42), wherein said end differs from the end on which the main body (41) is arranged; and

two said fitting holes (12) are arranged on the rear plate (11) and at least one of the fitting holes (12) is elongated.

2. The bike bottle holder as claimed in claim 1, wherein a receptacle (15) for receiving the rear stopper (52) is arranged on the rear face side of the rear plate (11).
3. The bike bottle holder as claimed in claim 1, wherein the two recesses (131) are arranged on the upper side and the lower side of the chamber (13) and the two latches (412) are arranged on the upper side and the lower side of the main body (41), at which the upper side and the lower side of the chamber (13) face each other and the upper side and the lower side of the main body (41) face each other.
4. The bike bottle holder as claimed in claim 1, wherein the bolt (51) is a screw and the rear stopper (52) is a nut, the bolt (51) and the rear stopper (52) being capable of being combined with each other in a screwing way.
5. The bike bottle holder as claimed in claim 1, wherein an indentation is formed on the front face side of the rear plate (11) and a pad (60) is arranged in the indentation and provided with a through hole (61) which communicates with the fitting hole (12).
6. The bike bottle holder as claimed in claim 5, wherein the fixing pins (62) are arranged on the pad (60) and fixing holes (16) into which the fixing pins (62) are to be inserted are arranged in the indentation of the

rear plate (11).

7. The bike bottle holder as claimed in claim 5, wherein the pad (60) is shock-absorbing.

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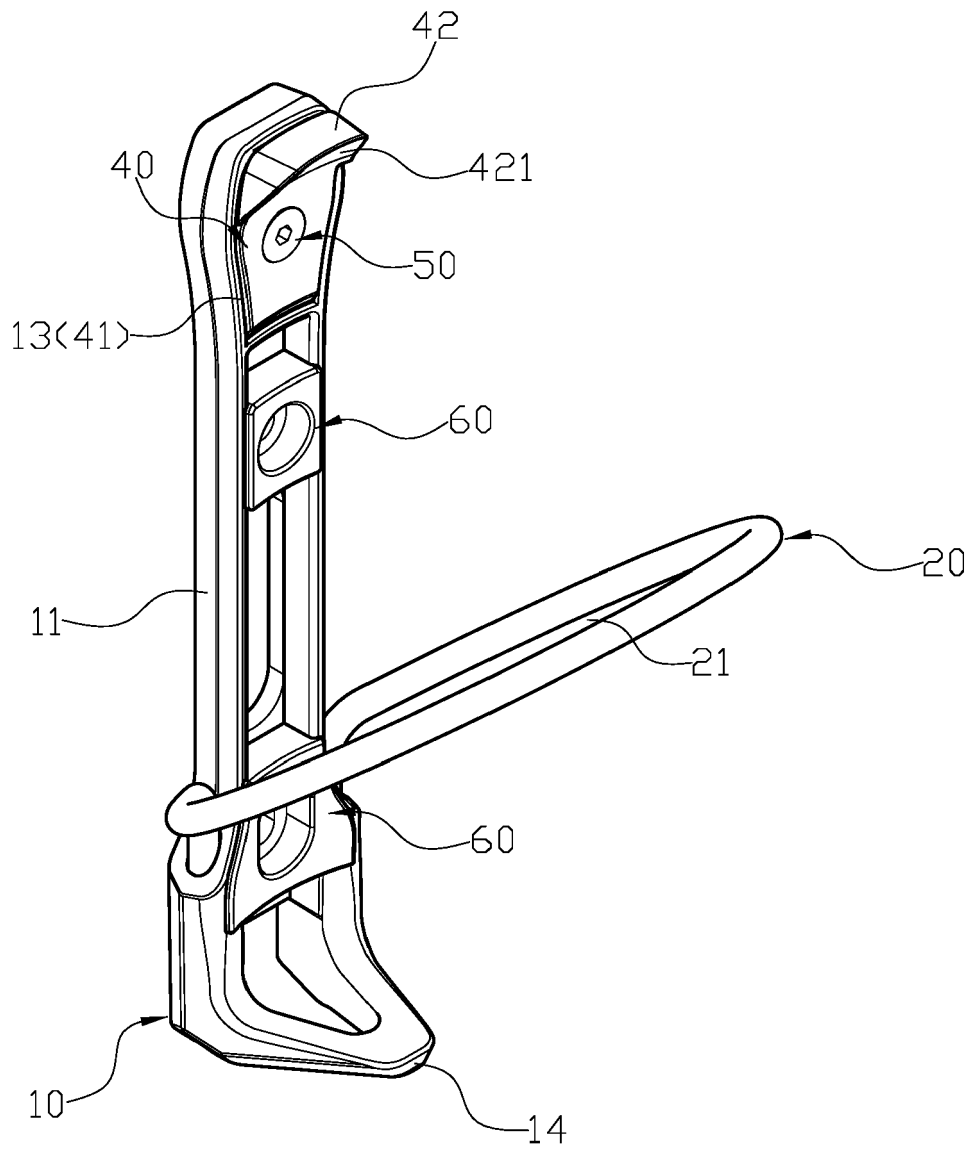


FIG. 1

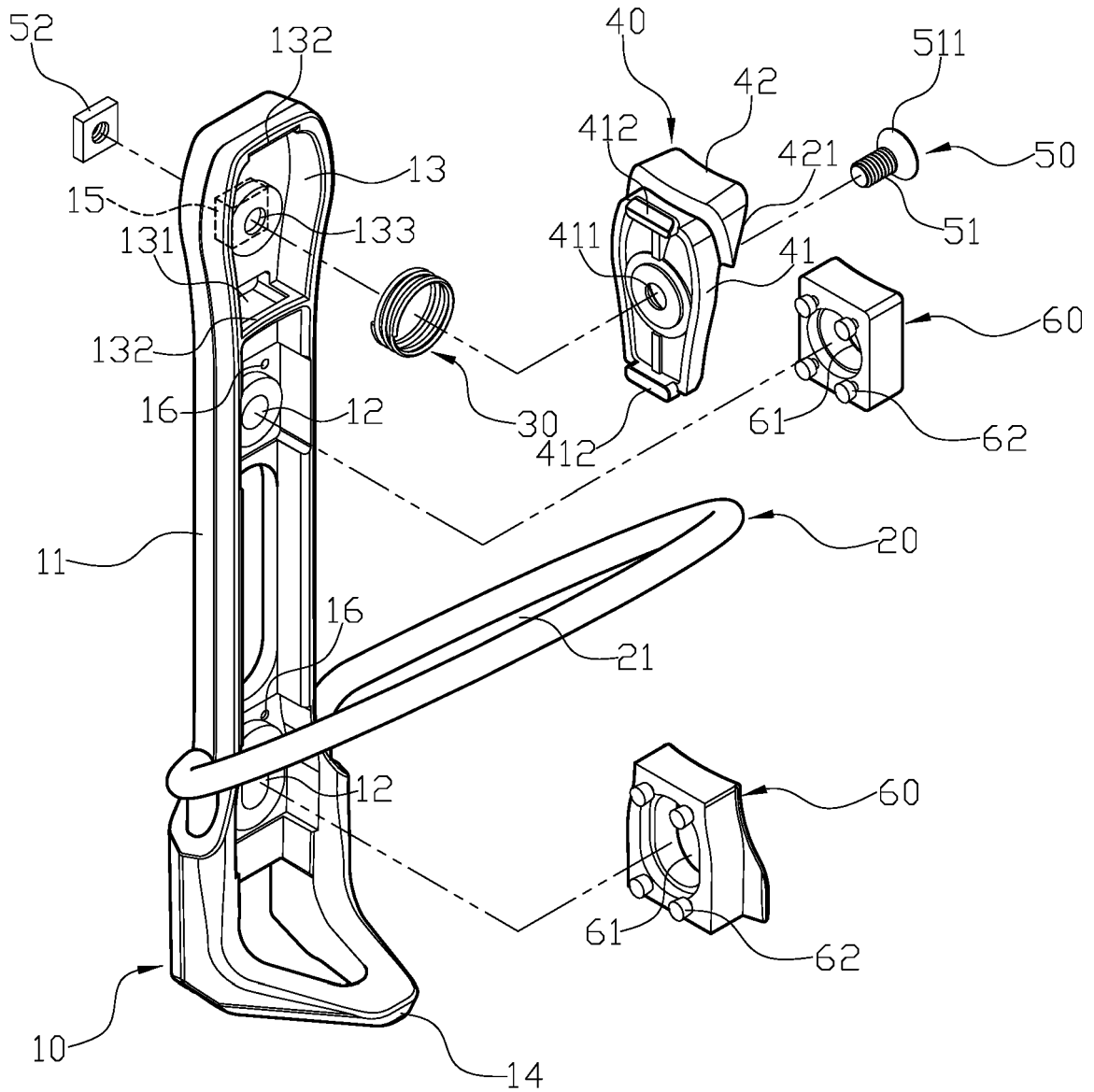


FIG. 2

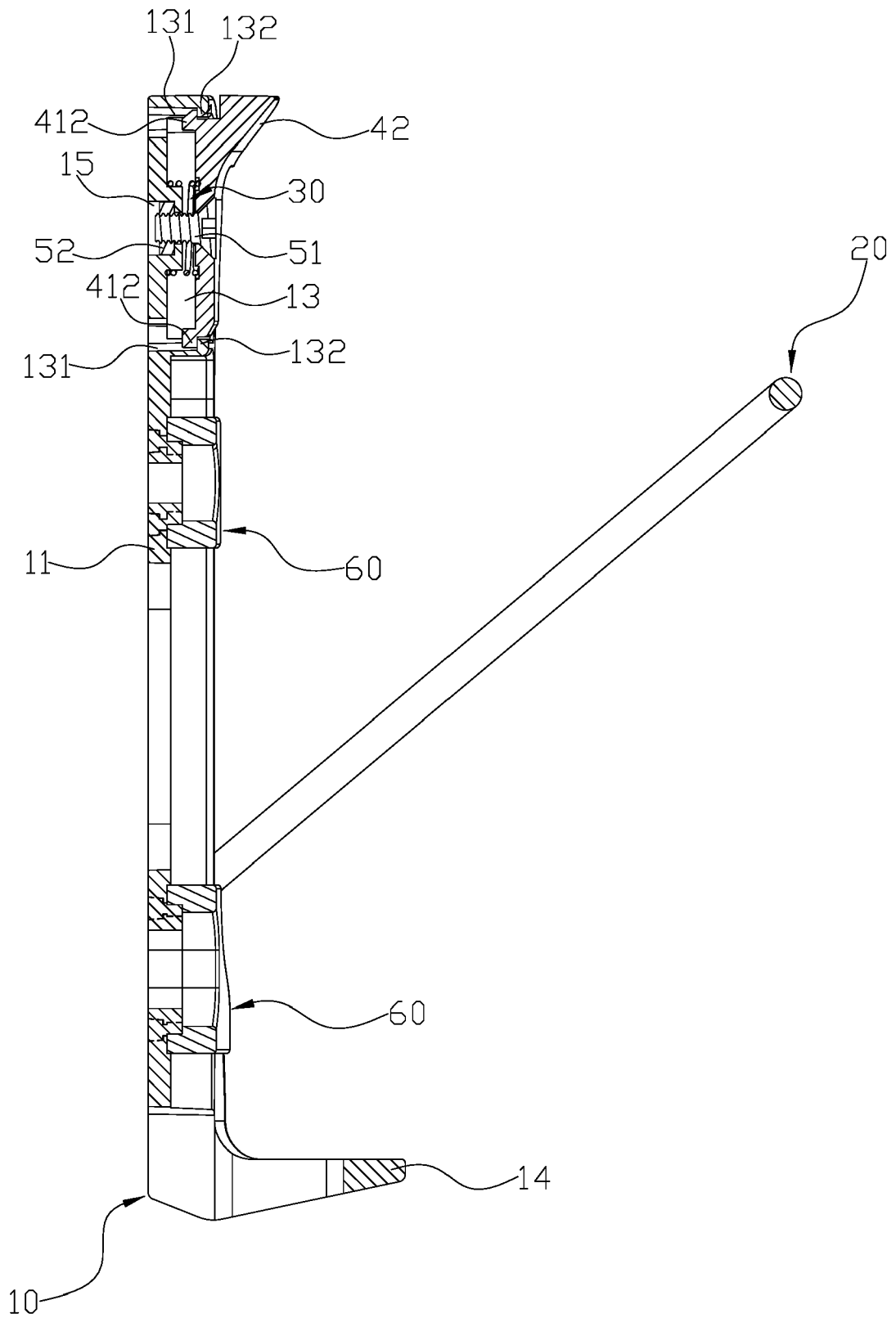


FIG. 3

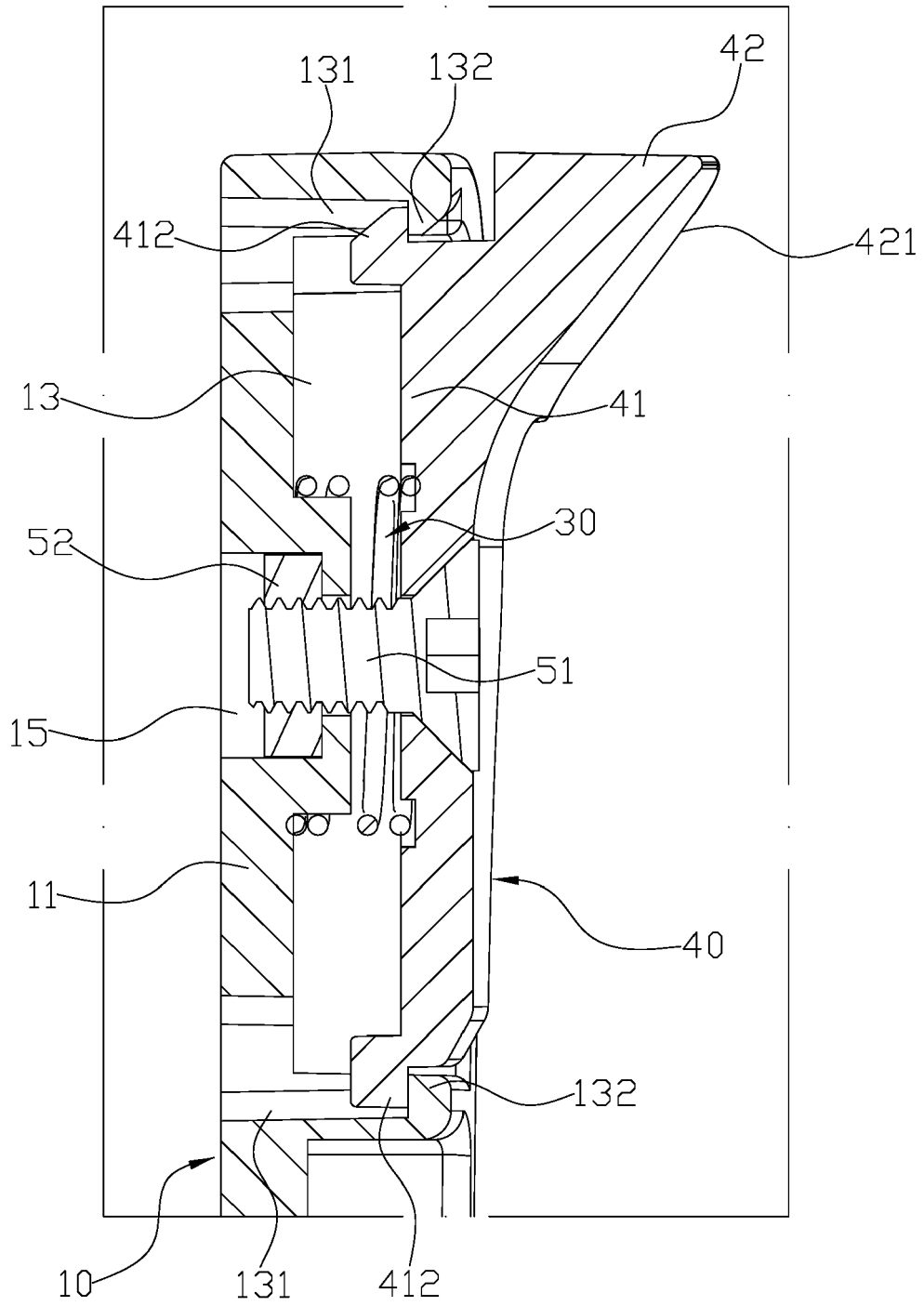


FIG. 4

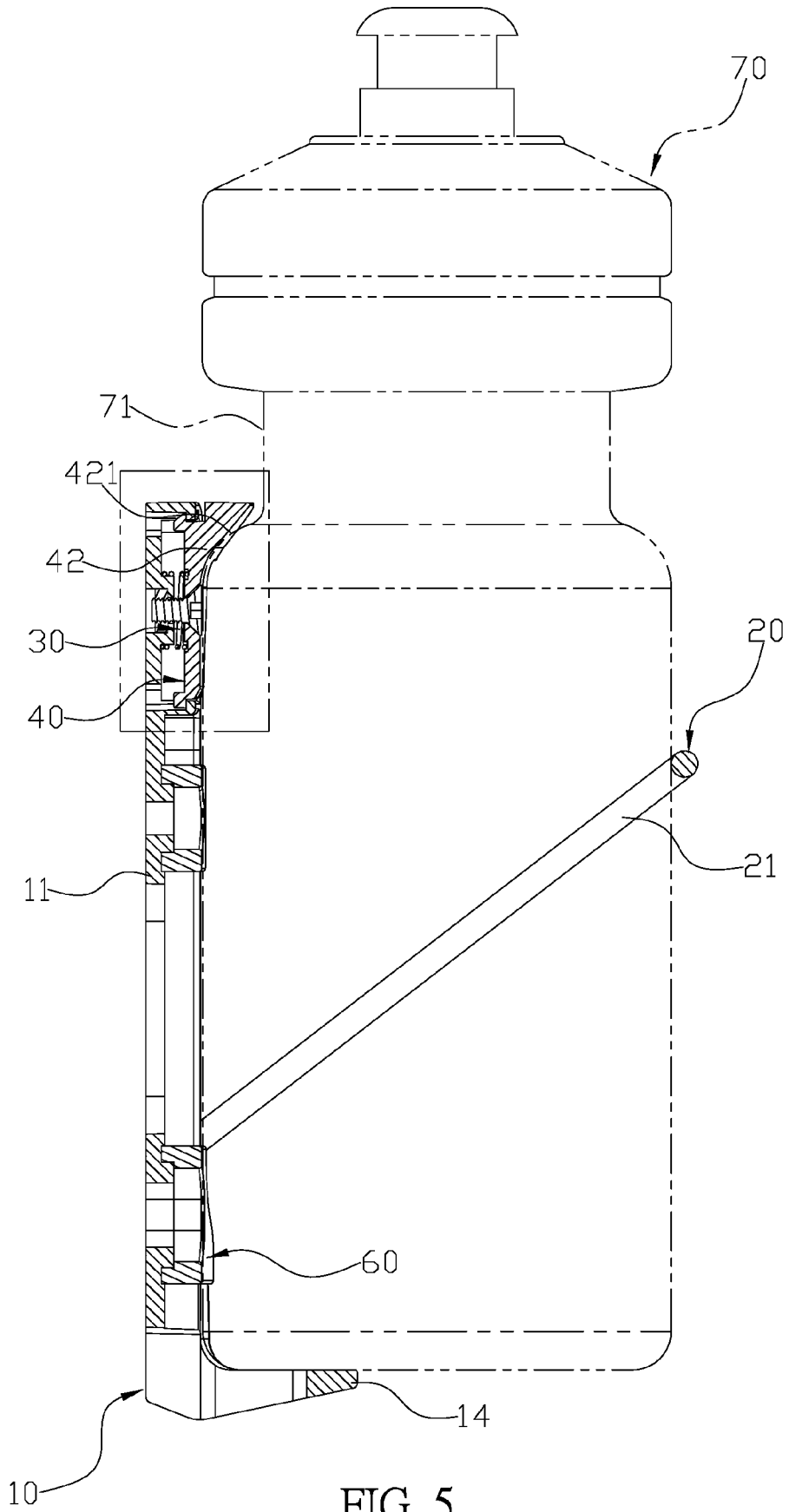


FIG. 5

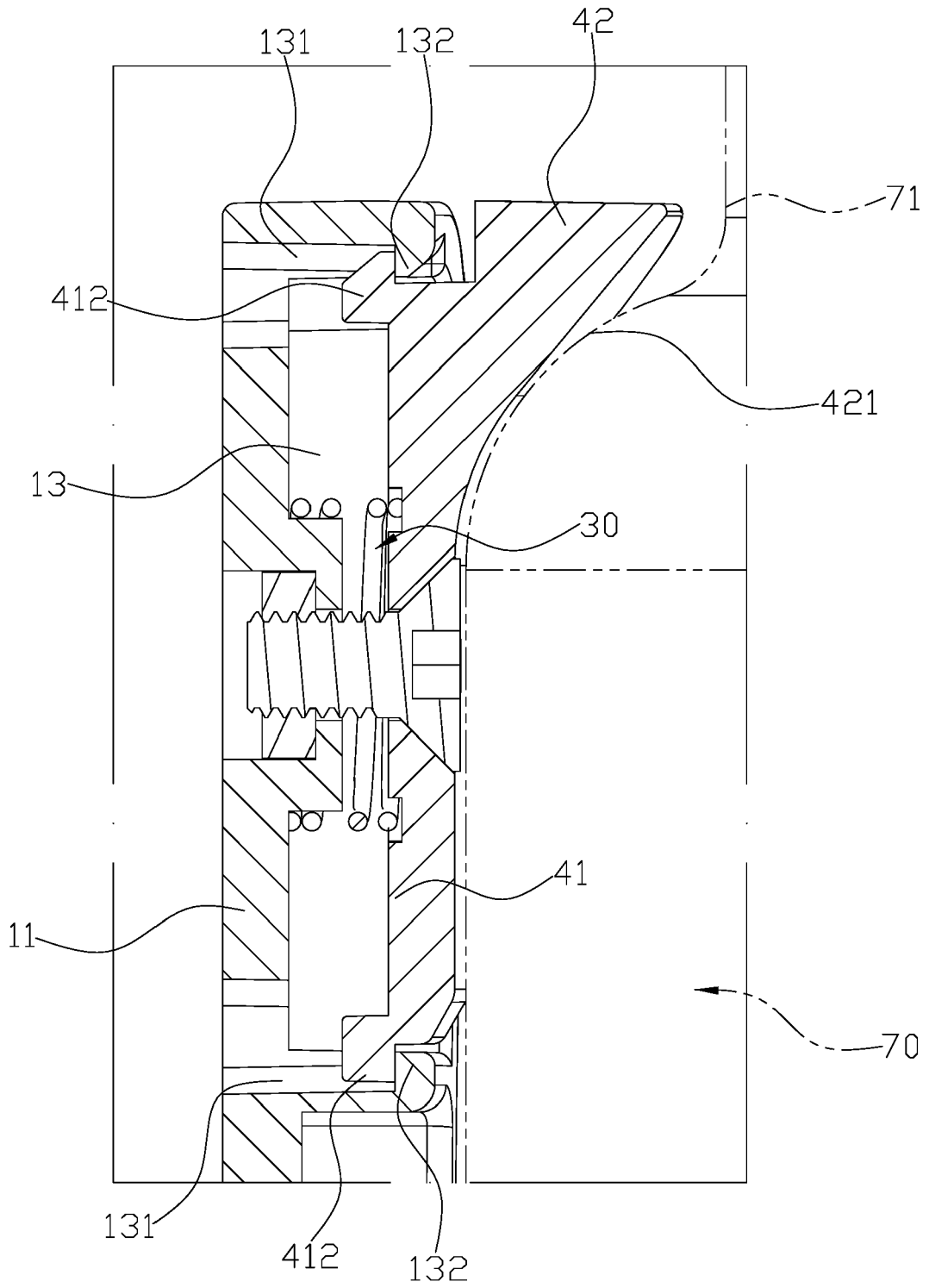


FIG. 6

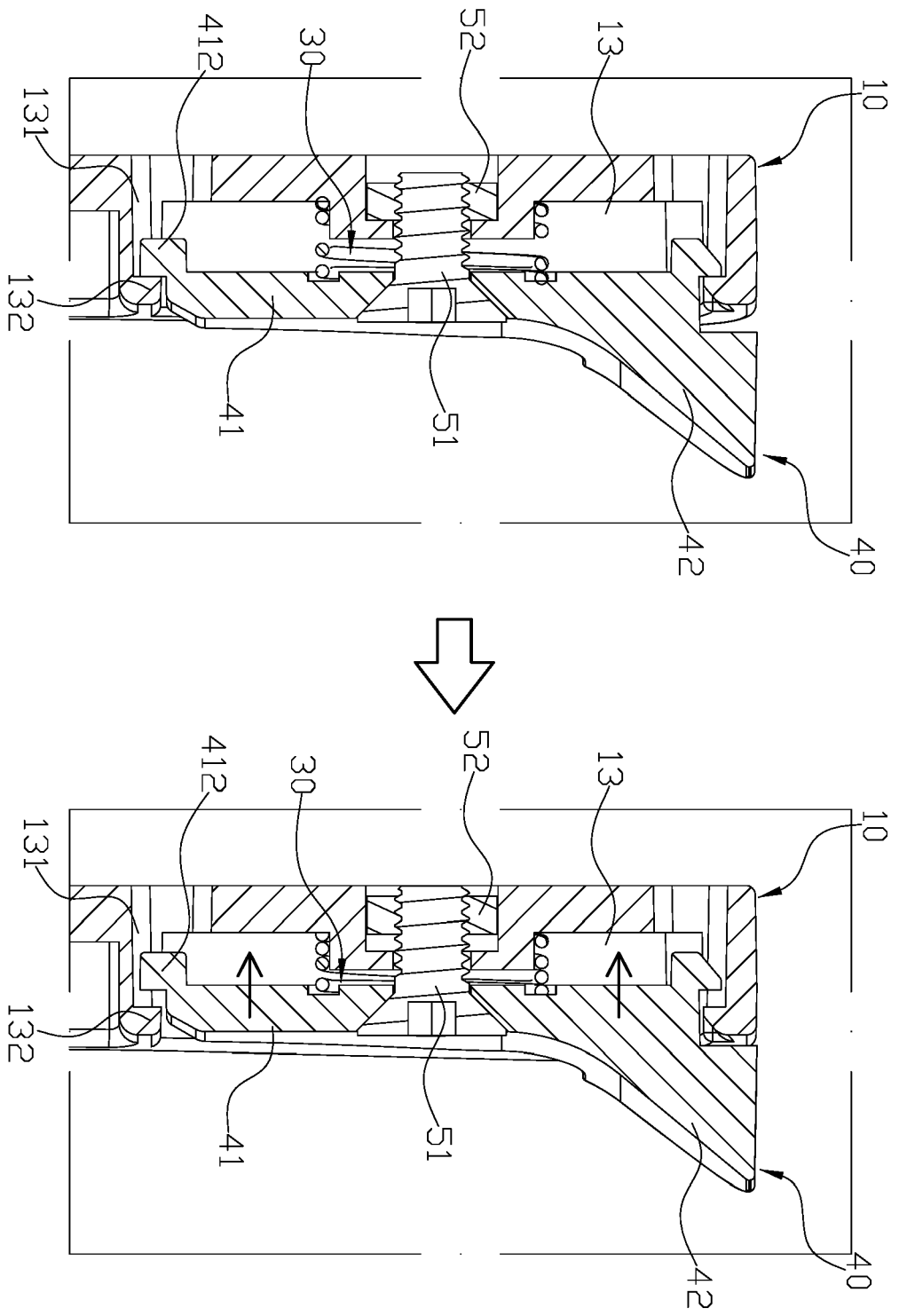


FIG. 7

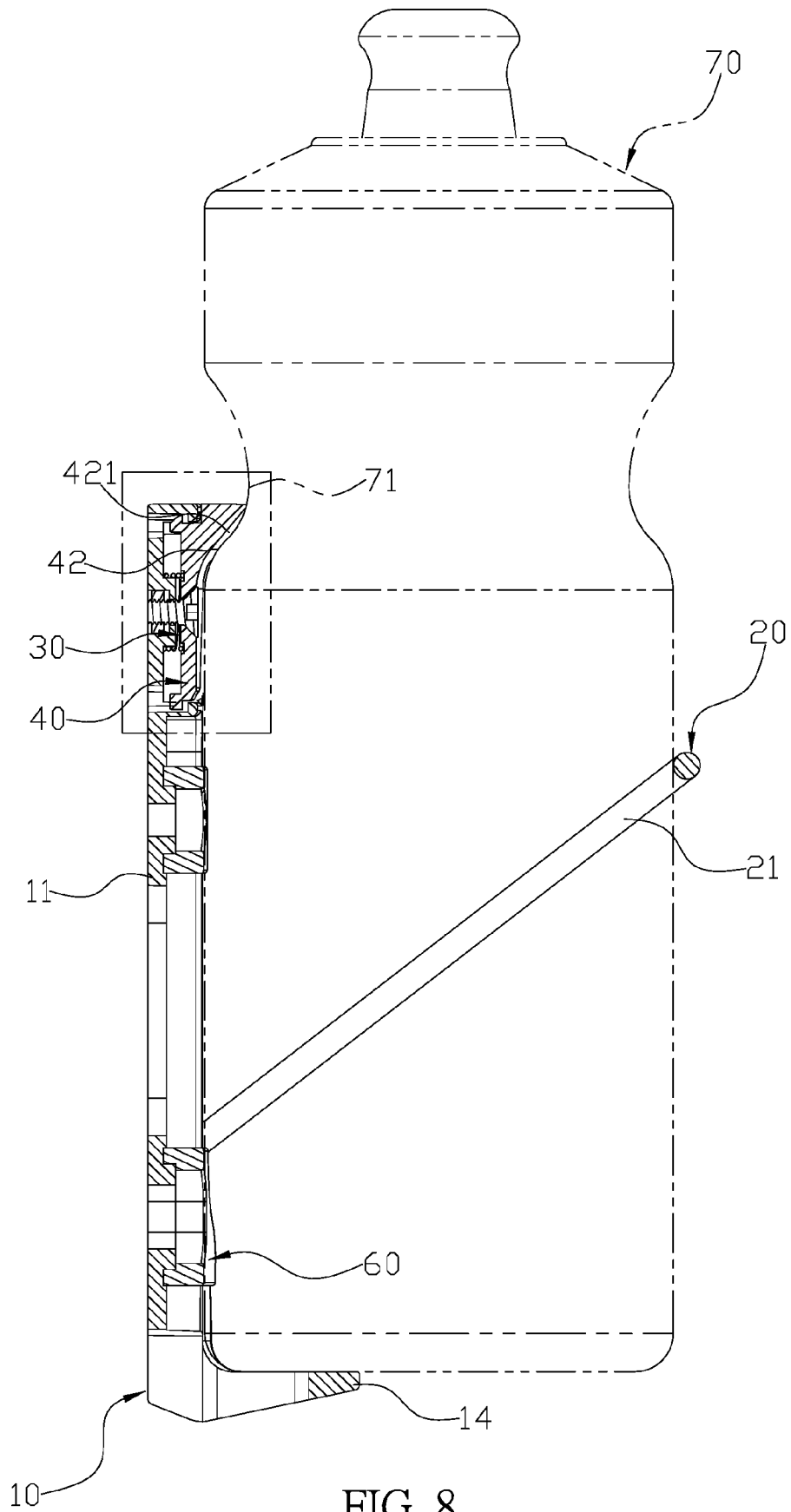


FIG. 8

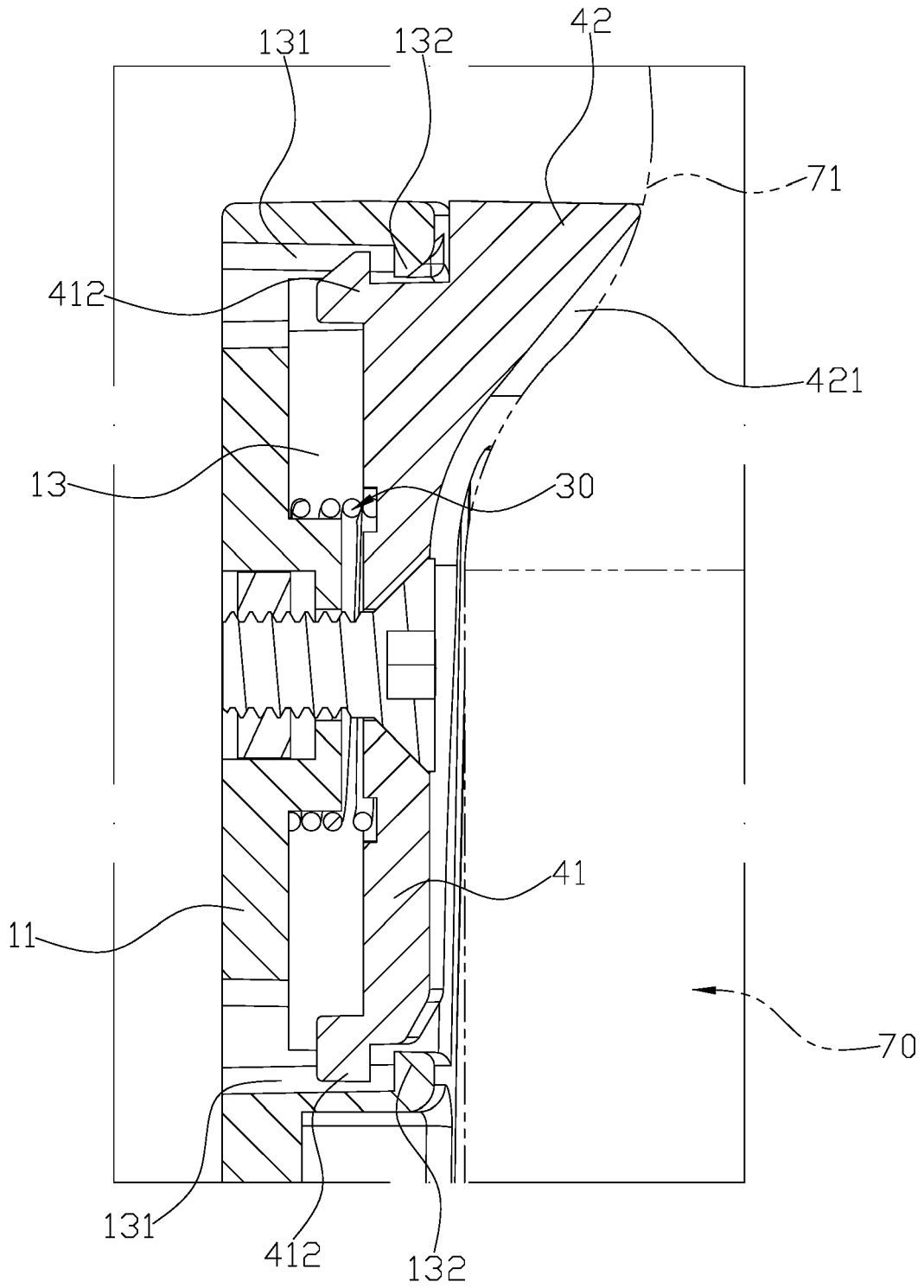


FIG. 9



EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2020/116299 A1 (HUANG PEI-HSIU [TW]) 16 April 2020 (2020-04-16)	1, 3-5	INV. B62J11/04
A	* figures 1-9 *	2, 6-8	
X	CN 216 468 203 U (SHENZHEN TALAS SCIENCE AND TECH CO LTD) 10 May 2022 (2022-05-10) * figures 1-9 *	1, 3, 5	
A	CN 213 008 489 U (TIANJIN TIANCHANG QINYAO BICYCLE CO LTD) 20 April 2021 (2021-04-20) * figure 3 *	1	
A	CN 110 606 150 B (ZOU XUAN) 13 April 2021 (2021-04-13) * figure 1 *	1	
A	CN 209 617 339 U (UNIV NANJING FORESTRY) 12 November 2019 (2019-11-12) * figures 1-3 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			B62J
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		25 July 2023	Booij, Nico
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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25-07-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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CN 213008489 U	20-04-2021	NONE	
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CN 110606150 B	13-04-2021	NONE	
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CN 209617339 U	12-11-2019	NONE	
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